



DECISION MEMO
JOHNNY CROW WILDLIFE HABITAT IMPROVEMENT PROJECT
U.S. FOREST SERVICE
ELKHORN MOUNTAINS
TOWNSEND RANGER DISTRICT and HELENA RANGER DISTRICT
HELENA – LEWIS AND CLARK NATIONAL FOREST
BROADWATER & JEFFERSON COUNTY, MONTANA

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INTRODUCTION

The Johnny Crow Wildlife Habitat Improvement project area is located in the Elkhorn Mountains approximately 10 air miles from Townsend, Montana. It is located in the Elkhorn Wildlife Management Unit on the Townsend and Helena Ranger Districts of the Helena – Lewis and Clark National Forest primarily in the Crow Creek watershed, as well as Johnny’s Gulch and Indian Creek drainages. Specifically the project would occur in: T. 6 N., R. 1 W., Sec. 1-36; T. 7 N., R. 1 W., Sec. 1-36; T. 6 N., R. 2 W., Sec. 1-15, 23-26, 34-36; and T. 2 N., R. 2 W., Sec. 1-36.

The Elkhorn Mountains are an island mountain range characterized by diversity in geologic formation, climate, soils, and topography which in turn supports a wide variety of ecosystems. These ecosystems are comprised of grasslands, shrublands, riparian vegetation, coniferous, and deciduous forests. The southern and eastern portions of the project area are dominated by shrub and grasslands, while the northern and western portions are dominated by Douglas-fir, sub-alpine fir, lodgepole, and limber pine. Whitebark pine can be found in the upper elevations of the project area.

The Helena National Forest Plan emphasizes maintenance and enhancement of big game habitat for elk, moose, mountain goats, and mule deer in the Elkhorn Mountains. Non-game wildlife species are also emphasized.

This project encompasses about 66,899 acres of grasslands, shrublands, riparian areas, aspen stands, and mature forests of which an estimated 13,525 acres will receive treatment through management activities. See Table 1 below for a breakdown of the acres being treated.

The Elkhorn Mountains contain the 75,415 acre Elkhorn¹ Inventoried Roadless Area, of which 37,052 acres are within the boundary of the project area. Of these acres a maximum of 6,046 acres are planned for treatment (eight percent of the total 75,415 acre Inventoried Roadless Area). See Table 2 below for a breakdown of the acres being treated within the inventoried roadless area by treatment activity.

Please see appendix A for a project area map. The project area map shows the areas within which the treatments will occur.

PURPOSE AND NEED

Purpose and Need Statement

The purpose and need of the project is to maintain and enhance desired vegetative conditions that provide habitat for a variety of wildlife species. Specifically, project objectives are to:

- Improve forage on elk and mule deer winter and summer range through the removal of colonizing conifers in grass and shrublands;

¹ Elkhorn Wilderness Study Area with Additions Inventoried Roadless Area (IRA) name has officially changed. The Inventoried Roadless Area’s former name implied it was a wilderness study act area; however that designation was removed in September 1986, through a proposal signed by President Reagan. Even though the wilderness study area designation was removed, the Inventoried Roadless Area designation remained until February 24th, 2017 when the name was officially changed to the Elkhorn Inventoried Roadless Area. Due to the timing of when this decision was signed and the official name change occurred the project record still reflects the previous name.

- Enhance nesting habitat for bird species that rely on grass and shrubland habitats through the removal of conifers currently colonizing grass and shrublands;
- Increase riparian vegetation diversity for moose, mule deer, and westslope cutthroat trout through the reduction of colonizing conifers in riparian areas;
- Promote age class and tree species diversity within conifer stands in order to improve elk calving and summer habitat; and
- Encourage growth and expansion of whitebark pine through thinning and prescribed fire.

Background

Fires were a frequent occurrence in the Elkhorn Mountains before settlers arrived, and while they still occur they do not occur at the same frequency. Fires invigorate vegetation by removing buildups of downed trees, opening forested areas for other vegetation growth, and restoring nutrients back into soils. The full diversity of wildlife habitats (i.e. habitats that support elk, moose, mule deer, and mountain goat) has been compromised by the decline in vegetative diversity due, in part, to fire suppression (Smith 2000).

Results from the *Role of Fire in the Elkhorn Mountains* (Barrett 2005) suggest that most ecosystem types in the eastern portion of the Elkhorn Mountains have been altered by long-term fire exclusion, grazing, and other land-use activities.

As noted in the *Elkhorn Cooperative Management Area Conifer Colonization Management Strategy* (2012), there is ample evidence of conifer colonization onto grassland communities. Historically, the grasslands of the Elkhorn Mountains experienced a mean fire interval of 16 years with stand replacing fires considered the dominant fire severity type (Barrett 2005). The grasslands in the area evolved under this high-frequency fire regime which generally confined tree growth to areas where understory fuels were sparse (Arno and Gruell 1986). Today the mean fire interval in grasslands in the Elkhorn Mountains is 251 years (Barrett 2005). Sagebrush communities in the Elkhorn Mountains have also experienced changes in mean fire intervals. Historically, sagebrush in the Elkhorn Mountains experienced a mean fire interval of 17 years with frequent mixed severity fires considered to be the predominant fire severity type (Barrett 2005).

Historically, the lower subalpine forest (lodgepole pine-dominated stands) of the Elkhorn Mountains mean fire interval generally ranged between 40 and 60 years long (*mean fire interval*: 53 years). The intervals between consecutive fires generally spanned from 25 to 100 years long, but displayed wide variation. By comparison, the current fire interval (years-since-last-fire statistic) averages nearly 120 years long, more than twice as long as the pre-settlement mean fire interval. Lower subalpine stands often burned with a mixed severity pattern (interspersed with occasional stand replacement) because that portion of the lower subalpine forest adjoins the frequently burned Douglas-fir/Mountain Grassland vegetation type. Overall, fire visited the landscape on a much more frequent basis.

At higher elevations whitebark pine has experienced high levels of mortality due to mountain pine beetle and white pine blister rust. Whitebark pine is considered a keystone species in that it is responsible for maintaining and increasing the biodiversity on the landscape. Whitebark pine is an important food source for a variety of wildlife species in the Elkhorn Mountains due to the high nutritional value of its seeds.

Across the project, development of age-class diversity within coniferous and deciduous stands has stalled (see the silviculture and wildlife specialist reports for more detailed information). Age-class diversity provides a mosaic of habitat types upon which several wildlife species depend. High quality elk habitat, for example, is determined by the interspersed types of vegetation which in turn provides large amounts of edge habitat important for elk cover and forage. Another example would be Cassin's finches, a species of concern, which prefer open coniferous forests with mature lodgepole pine.

The Elkhorn Mountains are managed in partnership as the Elkhorn Cooperative Management Area, where multiple agencies work together to manage the mountain range regardless of boundaries. The Elkhorn Cooperative Management Area is managed by the Beaverhead-Deerlodge and Helena – Lewis and Clark National Forests, the Butte Field Office of the Bureau of Land Management (BLM) the Montana Department of Fish, Wildlife and Parks, and more recently the Natural Resource Conservation Service and the Army National Guard.

In addition to agency partnerships, there are also two citizen groups actively involved in the development of collaborative recommendations related to ecosystem management in the Elkhorn Mountains. These groups are the Elkhorn Working Group and the Elkhorn Restoration Committee which is a part of the Montana Forest Collaborative Network (formerly the Montana Forest Restoration Committee).

The Elkhorn Restoration Committee promotes sound application of ecological principles in landscape management. To that end, Elkhorn Restoration Committee completed the report *Restoration of Ecosystems in the Elkhorn Cooperative Management Area*. That report described current vegetative conditions relative to those that may have been present if natural disturbance processes had been allowed to unfold without human intervention. That report, among others (i.e. the *Montana's Comprehensive Fish and Wildlife Conservation Strategy*, *Elkhorn Cooperative Management Area Conifer Colonization Management Strategy*) provided context for the Johnny Crow project.

DECISION & RATIONALE

I have decided to approve the *Johnny Crow Wildlife Habitat Improvement Project* implementing management activities that will meet the project's purpose and need. The treatments include a combination of hand slashing and/or girdling conifer trees, (less than 12 inch diameter-at-breast-height) and/or the use of prescribed fire. No commercial product will be removed and access will remain unchanged with no road construction, reconstruction or maintenance planned. No large mechanized equipment will be involved.

Implementation of this project will increase and enhance habitat across approximately 13,525 acres (see Table 1 below). Treatments in grass and shrublands are designed to improve foraging habitat for elk and mule deer and structural diversity for ground-nesting birds. Lodgepole pine treatments are designed to increase the landscape heterogeneity in turn providing wildlife species increased opportunities to select from a variety of habitat conditions and successional stages. Treatments in five-needle pines will also improve foraging habitat for several wildlife species present in the project area. For more detail on how these treatments will move the project area toward the purpose and need, please refer to appendix C of this document as well as in the resource specialist reports.

I have reviewed all scoping comments from interested parties, resource specialist reports, and a variety of research documents, all of which provided me a diverse spectrum of information for guiding my decision (see project file for the scoping comments, specialist reports and supporting documentation). I have also personally observed and validated the existing condition in the field. Based on this information, I feel that the management activities that I am approving are the best options for meeting the purpose and need.

Some interested parties were in favor of larger treatments. For example, the Elkhorn Restoration Committee indicated concern that treatments were not of sufficient size and scope to move the project area towards broader restoration goals. In their report, *Restoration of Ecosystems in the Elkhorn Cooperative Management Area*, the Elkhorn Restoration Committee indicated that at least 15,000 acres of forested areas (including riparian) would have to be treated to achieve the identified restoration goals. The Johnny Crow project includes treatments on about 3,500 acres of forested areas. Likewise, the Johnny Crow project includes treatments on about 9,500 acres of grass and shrublands compared to 26,000 acres recommended in the *Restoration of Ecosystems in the Elkhorn Cooperative Management Area* report.

While larger treatments would move the project area closer to conditions described in the *Restoration of Ecosystems in the Elkhorn Cooperative Management Area* report - as well as in the *Crow Creek Analysis Area Ecosystem Analysis at the Watershed Scale* - the retention of hiding cover was important given the current tree mortality associated with the mountain pine beetle and the anticipated hiding cover loss as trees fall. Project design criteria and habitat surveys will assure that hiding cover will not be lowered below Forest Standards. Furthermore, the Canada lynx has been identified as a possible transient in the Elkhorn Mountains; as such, it was important to retain snowshoe hare habitat in order to provide foraging habitat for transient lynx. Therefore, there are no treatments in snowshoe hare habitat (i.e. early stand initiation, stand initiation, and multistory snowshoe hare habitat).

There was concern over treatments in sagebrush and the importance sagebrush has for wildlife. In order to protect sagebrush, the only treatment that will occur in sagebrush habitat, will be hand cutting and removal of colonizing conifer. Prescribed fire will not be applied in sagebrush stands except where fire may incidentally extend into a sagebrush stand as a result of adjacent grassland burning.

Several commenters asked for the development of action alternatives. However, in order to meet the purpose and need of the project and due to the absence of extraordinary circumstances within the project area, I felt the development of action alternatives was unnecessary.

Comments were also received that questioned why I chose trees that are less than 12 inches diameter-at-breast-height as the target for generally small diameter. Field observations have indicated that colonizing conifers less than 12 inches diameter-at-breast-height are abundant in the project area and are a strong source of outcompeting grassland and shrubland habitat. Intensified grid data also indicates trees less than 12 inches in diameter-at-breast-height are abundant in the project area. The removal of trees less than 12 inches diameter-at-breast-height in treatment areas, as described in the project proposal and as guided by design elements, are required in order to meet the purpose and need. Furthermore, my decision treats approximately 36 percent of the grassland and shrubland habitat identified in the *Restoration of Ecosystems in the Elkhorn Cooperative Management Area* report, leaving over 60 percent of habitat that is still being colonized by conifers. This will leave conifers on the landscape that are less than 12 inches diameter-at-breast-height.

Interested parties also expressed concern for noxious weed spread connected to activities associated with this project. This decision does not include the application of herbicide but rather the design criteria associated with this decision aligns with the permitted treatments found in the Noxious Weed Treatment Project final environmental impact statement, Helena National Forest Record of Decision (USDA FS 2006). Best management practices for noxious weed management will be emphasized during implementation of this decision.

I feel that this decision best meets the purpose and need while balancing interests and concerns expressed by the public. My decision includes the design criteria and monitoring outlined in appendix B.

The following table displays the treatment by habitat community and Table 2 shows the approximate acres of treatment in each management area and the inventoried roadless area:

Table 1: Summary of Treatment Activities by Habitat Community.

Habitat Communities	Treatment*	Estimate of Acres to be Treated**
Grassland and Shrub Enhancement	Hand slashing followed by broadcast prescribed fire where applicable	9,565
Riparian, Wetland and Aspen Habitat Enhancement	Hand slashing and/or low-severity prescribed fire through indirect ignition	460
Promotion of Forest Stand Age Class and Species Diversity	Mixed severity prescribed fire	3,000
Promotion of Five-Needle Pine	Hand slashing and/or girdling	500
Total Activity acres		13,525
<p>*Exact treatment applied will be determined on the existing conditions and what will best meet the purpose and need. For example, some shrubland habitats will not receive prescribed fire in order to protect sagebrush and/or prevent the spread of noxious weeds.</p> <p>**Acres identified reflect the total maximum treatment area; exact implementation acres may be less depending on site conditions and design elements.</p>		

Table 2: Management Area Acres by Treatment Activity

Management Area/ Inventoried Roadless Area	Treatment Activity Acres*			
	Grassland and Shrubland Enhancement	Riparian, Wetland and Aspen Habitat Enhancement	Promotion of Forest Stand Age Class and Species Diversity	Promotion of Five-Needle Pine
Elkhorns-1	9,290	350	200	25
Elkhorns-2	175	10	2,800	400
Elkhorns-3	100	100	0	75
Elkhorn Inventoried Roadless Area	2,296	250	3,000	500
* Acres identified reflect total maximum treatment area; exact implementation acres may be less depending on site conditions and design elements.				

See appendix A for the Management Activity Decision Map, appendix B for design criteria, appendix C for activity descriptions and appendix D for treatment descriptions.

CATEGORICAL EXCLUSION

In reviewing the information and evidence presented in the project record and evaluating information submitted from public input, I have determined that the actions within this decision can be categorically excluded from documentation in an environmental impact statement (EIS) or an environmental assessment (EA). The applicable category of actions is identified in agency procedures as 36 CFR 220.6(e)(6) - *Timber stand and/or wildlife habitat improvement activities that do not include the use of herbicides or do not require more than 1 mile of low standard road construction*, as further described in FSH 1909.15 Sec. 31.2. This category is applicable because the evidence presented in the project record and briefly described below demonstrate that the cause-effect relationship between the actions in this decision and the degree of the effects on the resource conditions result in no extraordinary circumstances.

RESOURCE CONDITIONS

I find that there are no extraordinary circumstances that would warrant further analysis and documentation in an EA or EIS. I took into account the following resource conditions identified in agency procedures under 36 CFR 220.6(b)(1) that should be considered in determining whether extraordinary circumstances might exist:

- 1) *Federally listed threatened or endangered species or designated critical habitat, species proposed for Federal listing or proposed critical habitat, or Forest Service sensitive species* - This decision is in compliance with the Endangered Species Act and is in accordance with Section 7 (c) of the Endangered Species Act, as amended. No adverse effects are anticipated on threatened, endangered, or proposed species. The respective Biological

Assessments and/or Biological Evaluations for fish, terrestrial animals, and sensitive plants are located in the project record.

WILDLIFE - Canada lynx, a threatened species, is identified as transient in the project area according to the U.S. Fish and Wildlife Service species list of November 25, 2016.

Wolverine, a proposed species, is also on that list for the project area. While grizzly bears (threatened) are not on the U.S. Fish and Wildlife Species list, one has been confirmed in the project area (June 2016). A **may affect not likely to adversely affect** determination has been reached for lynx and grizzly bears. The project would not jeopardize the continued existence of wolverines. None of the treatments would threaten the viability of sensitive species. A **may impact individuals but is not likely to result in a trend towards federal listing or loss of viability** determination has been reached for boreal toads. A **no impact** determination has been made for all other sensitive species.

PLANTS - Whitebark pine (*Pinus albicaulis*), *Juncus hallii* and *Phlox kelseyi* var. *missoulensis* are present in the project area, as well as potential habitat for *Botrychium crenulatum*, *B. paradoxum*, and *Polygonum douglasii* ssp. *austinae*. The project **may impact individuals but is not likely to result in a trend towards federal listing or loss of viability**.

FISH – Westslope cutthroat trout, a sensitive fish species, is present in the project area. The project **may impact individuals but is not likely to result in a trend towards federal listing or loss of viability**.

- 2) *Flood plains, wetlands, or municipal watersheds* - Activities would meet state water quality standards for streams for sediment if all reasonable land, soil, and water conservation practices are implemented and those practices “protect present and reasonably anticipated beneficial uses.” Beneficial uses have been designated for project area streams, however, the activities would most likely have a minimal effect on salmonid habitat through increased sediment delivery to streams.

In streams with no previously identified water quality impairment, this report assumes that beneficial uses are being fully met and would continue to be met if project activities do not cause an increase in sediment delivery, as predicted by modeling.

The project would affect riparian and other wetland habitats where fire enters. However, low intensity backing down fire would be patchy and would mimic the natural fire roles in prescription restrictions within Riparian Habitat Conservation Areas in these areas, and soil best management practices would be implemented to protect wetlands (see Project Soils Resources Report for more information). This analysis assumes that by adhering to the design criteria described, treatment activities would not impair hydrologic function of wetlands or riparian areas.

McClellan Creek is the former municipal watershed for the City of East Helena, however is not currently functioning as the municipal watershed. The City of East Helena still maintains the surface water rights on McClellan Creek for municipal use. McClellan Creek is north of the project area and treatments will not have an effect on the McClellan Creek watershed.

- 3) *Congressionally designated areas such as wilderness, wilderness study areas, or national recreation areas* - No project activities will occur in or adjacent to any designated or proposed wilderness, wilderness study areas, or national recreation area and therefore, there are no effects to these areas.
- 4) *Inventoried roadless areas or potential wilderness areas* - The Department of Agriculture, Forest Service adopted the Roadless Area Conservation Rule in 2001 (36 CFR 220 Subpart B) with the purpose "to establish prohibitions on road construction, road reconstruction, and timber harvesting in inventoried roadless areas on National Forest System lands". The intent of this final rule is to provide lasting protection for inventoried roadless areas within the National Forest System in the context of multiple-use management. Decisions made under the 1986 Helena Forest Plan must follow the intent of this rule.

Within this rule, the cutting, sale, or removal of trees must be clearly shown through project level analysis to contribute to the ecological objectives described in 36 CFR §294.13(b)(1), or under the circumstances described in paragraphs (b)(2) through (b)(4). Such management activities are expected to be rare and to focus on generally small diameter trees. Thinning of generally small diameter trees, that became established as the result of missed fire return intervals due to fire suppression, and which greatly increases the likelihood of uncharacteristic wildfire effects, would be permissible. This is the case for the Johnny Crow Wildlife Habitat Improvement Project area. Therefore this exception is being used.

In terms of the wilderness and roadless attributes, the natural integrity of the area has been somewhat impacted by past human activity. Mining, grazing and past harvest have resulted in impacts to the area, the results of which are still evident and likely will remain so into the future. However, the vegetative treatment being proposed would help restore those portions of the natural environment that are currently out of balance, i.e. plant species diversity would increase after prescribed fire, grassland, shrublands and meadows would be enhanced by reducing colonizing conifers. Restoring this natural environment would help create balance as well as improve the roadless characteristics.

Some wildlife may experience some displacement and disturbance due to project implementation. Scenic integrity may be temporally adversely affected due to proposed prescribed burning. Screening would be minimally altered for the short-term but overall would be maintained due to the nature of the treatments being proposed.

As the landscape responds to treatments from those activities wildlife habitat and the visual character would improve. Effects would be a landscape resembling its natural condition which includes plant diversity, age class diversification and fuels reduction.

For a full and detail discussion on how this project affects the wilderness and roadless characteristics please refer to the Inventoried Roadless Area specialist report in the project record.

- 5) *Research natural areas* -The area where activities will occur is not part of or adjacent to any Research Natural Area, therefore, there is no effect to any research natural area.

- 6) *American Indians and Alaska Native religious or cultural sites* – One subsurface cultural site is located within a treatment area. This known site will be clearly identified and avoided by all project activities. There were no tribal concerns expressed during consultation. If any religious or cultural sites are identified after the authorization of this decision, all project activities within the area will be halted until an effects analysis and consultation are completed. There are no conflicts anticipated with traditional use or other concerns.
- 7) *Archaeological sites, or historic properties or areas* - The agency has developed a survey strategy and implementation plan utilizing the Forest Site Identification Strategy and consistent with the USFS Region 1 Programmatic Agreement. Identified cultural resources will be avoided or protected by project activities i.e. prescribed fire near historic structures. Any unidentified historic properties found during project implementation would be reported to an archaeologist and avoided. It has been determined that the project will pose no adverse effect to historic properties following the phased plan for National Historic Preservation Act compliance and site avoidance stipulation (See Agency letter to SHPO, January 16, 2013 in the project record). Direction under the National Historic Preservation Act, Archaeological Resources Protection Act, and Native American Graves Protections and Repatriation Act will be followed.

Native American tribes with reserved right in the project area were contacted. No tribal concerns were identified (See June 11, 2015 Tribal Consultation Letter in the project file).

PUBLIC INVOLVEMENT

This action originally appeared on the Helena – Lewis and Clark National Forest's 'Schedule of Proposed Actions' (SOPA) in October 2015. On October 5, 2015, a public letter was mailed running both the 'Scoping' (36 CFR 220.4(e) and '30-Day Comment Period' (36 CFR 215.5) requirements concurrently. On October 5, 2015, a legal notice ran in the Helena Independent Record officially initiating the Scoping/30-day comment period. In addition to the legal notice a news article informing the public of about the project was also in the Helena Independent Record. Approximately 480 letters were mailed out describing the project; seven responses from interested publics were received. Three comments were supportive of the project but had some areas of concern and/or asked for further analysis; the other commenters expressed concerns and requested clarifying information. Agency responses to each of the commenters are in the project record. Additionally, two site visits with interested parties occurred, one with Montana Fish, Wildlife, and Parks was conducted in July of 2015 and another with Native Ecosystems Council and Montana Ecosystems Defense Council, Inc., was conducted in November of 2015. Notes from the site visits are available in the project record.

FINDINGS REQUIRED BY OTHER LAWS AND REGULATIONS

This decision is consistent with applicable laws and regulations and is consistent with the Helena National Forest Land Management Plan. The following summarizes findings required by major environmental laws.

National Environmental Policy Act (NEPA)-NEPA provisions and all regulations for implementation of NEPA (40 CFR 1500 & 36 CFR 220) have been followed in the development of this decision. The specialist

reports and other supporting material filed in the project record disclose the evidence reinforcing this decision. This Decision Memo describes the actions to be implemented and the rationale for making this decision.

National Forest Management Act (NFMA) and accompanying **Helena Forest Plan (1986)**. This project is consistent with the NFMA and the Forestwide goals, objectives, and standards in the 1986 Helena National Forest Land and Resource Management Plan, and its amendments as well as management area direction.

Federal law and direction applicable to sensitive species include the National Forest Management Act and Forest Service Manual (2670). The Regional Forester has approved the sensitive species list - those plants and animals for which population viability is a concern. In making my decision, I have reviewed the analysis and projected effects on all sensitive species listed as occurring or possibly occurring within the analysis area. I find that the results support the conclusions that the project will not lead to loss of viability or trend toward federal listing of any Region 1 sensitive species.

Clean Water Act and State Water Quality Standards-The design of project activities is in accordance with Forest Plan standards and guidelines, best management practices, and applicable Forest Service manual and handbook direction. The activities designed in this project do not require the need for timber haul routes due to no wood projects being removed from the project area. Project activities will be consistent with the Clean Water Act, State Water Quality Standards, and consistency requirements for total maximum daily load watersheds and, if necessary, will include the procurement of all applicable and necessary permits prior to implementation.

In the Administrative Rules of the Montana Water Quality Act (17.30.622(f) –17.30.624(f)), no increases are allowed above naturally occurring concentrations of sediment or suspended sediment, settleable solids, oils or floating solids detrimental or injurious to public health, recreation, safety, welfare, livestock, wildlife, birds and fish. The goal is to protect designated beneficial uses and meet or exceed Montana surface water quality standards.

Clean Air Act-Implementation of this decision will be compatible with Montana State Air Quality Bureau goals for clean air based on Forest Service participation and compliance with burning restrictions set by the Montana/Idaho Airshed Group. The practices established by the Airshed Group are considered Best Available Control Technology by the Department of Environmental Quality.

Environmental Justice and Civil Rights-Executive Order 12898, issued in 1994, requires consideration of whether projects would disproportionately impact minority or low-income populations. This decision complies with the Executive Order. The public was involved in the development of this project and comments received have been considered in this decision. Public involvement did not identify any adversely impacted local minority or low-income populations. This decision is not expected to adversely impact minority or low-income populations.

The Civil Rights Act of 1964 provides for nondiscrimination in voting, public accommodations, public facilities, public education, federally assisted programs, and equal employment opportunity. Title VI of the Act, Nondiscrimination in Federally Assisted Programs, as amended (42 U.S.C. 2000d through 2000d-6) prohibits discrimination based on race, color, or national origin. This decision complies with this Act.

IMPLEMENTATION

This project is not subject to an administrative review process such as appeal or objection. Implementation is anticipated to begin spring of 2017. A plan for implementation will be developed which will include the resource specific design criteria in appendix B. Treatments will be implemented incrementally over multiple years.

CONTACT INFORMATION:


For specific project information, please contact Corey Lewellen, District Ranger, at 402 South Front Street, Townsend MT, or (406)266-3425.



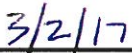
COREY LEWELLEN
Townsend District Ranger



Date



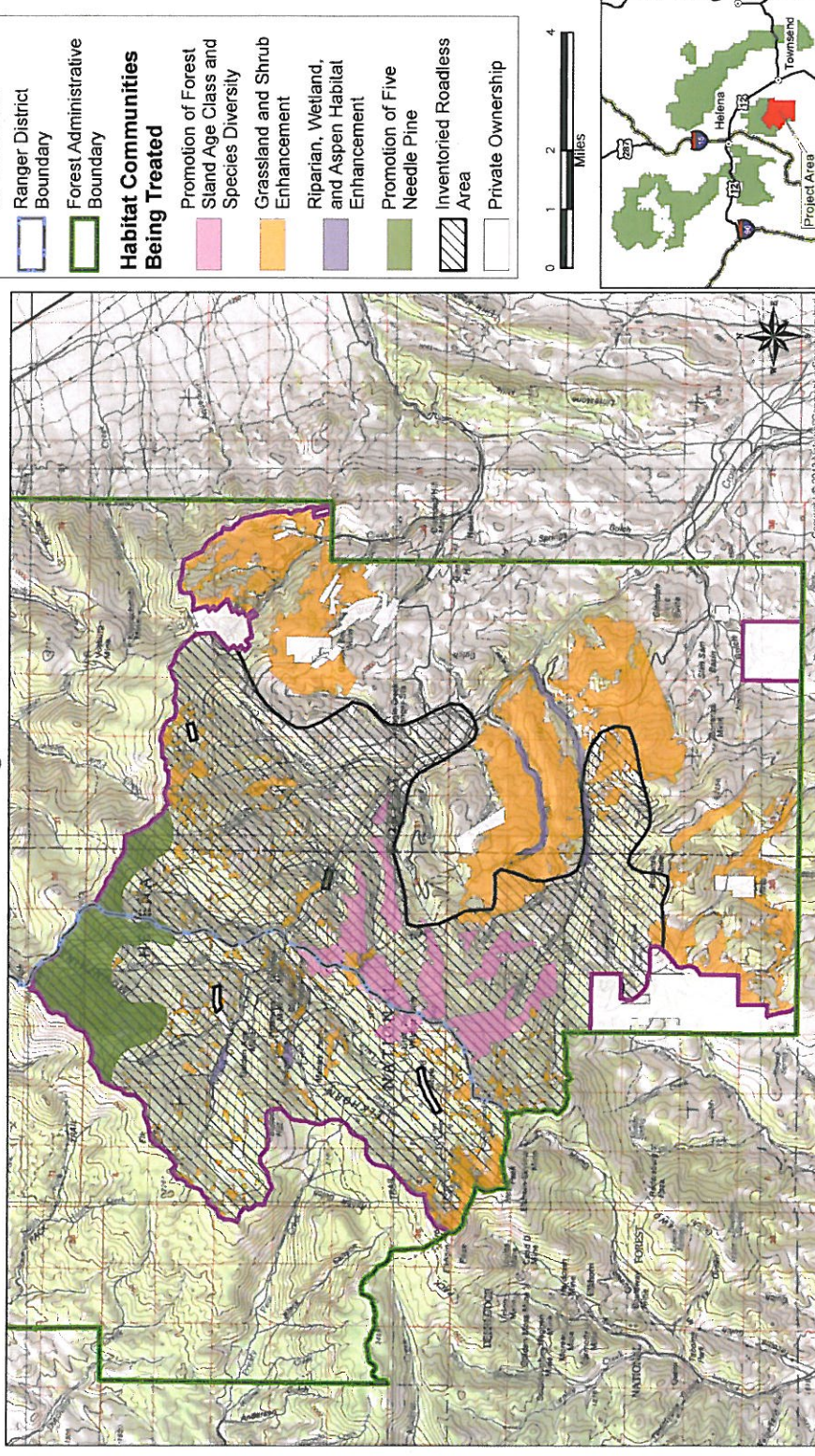
HEATHER DEGEEST
Helena District Ranger



Date

Appendix A: Decision Map

Decision Map - Johnny Crow Project Area Helena - Lewis and Clark National Forest Townsend and Helena Ranger Districts



Appendix B: Design Criteria and Associated Monitoring

Air

Prior to initiating any burning activities, a burn plan in compliance with the Montana/Idaho Airshed Group Operating Guide would be prepared for all prescribed fire units.

Location, timing and possible smoke effects would be disclosed in the local newspaper and to local residents prior to burning.

During the burn implementation periods, the prescribed burn boss would be responsible for monitoring site specific smoke analysis with current weather and air quality conditions prior to ignition.

Coordination of prescribed fire activities in other project areas would take place to ensure the amount of smoke would be manageable if multiple units across the project areas were burned.

Botany

Botanical surveys need to be completed for all areas of suitable habitat for sensitive species which overlap with project activities prior to implementation. The Forest Service Botanist would provide maps of known populations within the project area to be reviewed prior to each implementation season. This would involve a detailed review of sensitive plant locations, a unit-by-unit discussion of tactics, and a field review of any units where the intentions of botany mitigation/design measures are unclear.

Any potential habitat for Ute ladies' tresses (*Spiranthes diluvialis*) that is identified in the project area will be treated as occupied and no treatment will occur in these areas. These areas will be flagged and avoided.

Impacts to sensitive plant populations from ground disturbing activities would be minimized through implementation of techniques including, but not limited to a "no operation" buffers around sensitive plants; hand-piling, fueling stations and staging areas will be avoided within known populations; off road travel would be minimized and when feasible vehicles will remain within the road prism in areas of known populations; and areas of slash concentrations and prescribed fire control line will be minimized to the extent possible within the known population outside of the existing road prism.

Consult with the Forest Botanist to determine the phenologically appropriate time to implement prescribed burn treatments (i.e. spring or fall) for units that contain sensitive species. Time treatments to coincide with reduced impacts to sensitive species if feasible.

Monitoring would occur in sensitive plant populations within treatment units before and after implementation to determine if design criteria adequately protected existing populations and promote sensitive plant habitat. Adjustments to treatments would be made if necessary.

Fisheries - General

Riparian areas include aquatic and riparian ecosystems and associated floodplains. Riparian areas would be delineated prior to project implementation and at a minimum, are defined as would be 50-feet from edges of all perennial streams, lakes, waterbodies, floodplains and riparian ecosystems or at a greater distance.

Hazard trees in riparian areas would be felled and left. Hazard trees that had the potential to reach streams would be felled toward the stream to create aquatic habitat features.

No large mechanical equipment within riparian areas, hand-thinning only.

Dependent upon burn activity canopy reductions would be no more than 30 to 40 percent in riparian management zones.

Thinning would occur within the riparian buffer but would not enter within 50 linear feet of a stream channel unless an aquatic specialist would review the treatment thinning to determine the activity would not destabilize streambanks, and would not compromise stream temperature or future large wood recruitment.

Fisheries - Prescribed Fire Management Activities within Riparian Areas

There would be no ignition within riparian areas but, fire would be allowed to back into riparian areas.

Water sources for fire management would primarily be from existing stock ponds and engines. Portable pumps may be necessary, and spill containment measures for the pumps such as absorbent diapers, spill kits or physical containment would be required. Pump intakes should be screened to avoid entrainment and/or intake of juvenile fish and amphibians when pumping from fish bearing waterbodies. If pumping from a stream channel pumping rate should not exceed 10 percent of stream flow.

Although screening of pumps should largely eliminate the transfer of non-native fish species to other bodies of water inter-basin transfer of water should be avoided particularly in the following reaches: upper reaches of Hall Creek, South Fork Crow Creek, Crazy and Eureka creeks. There are currently barriers (natural and manmade) that separate non-natives from pure strain westslope cutthroat trout populations.

Staging areas will be located outside of riparian areas.

Motorized vehicles would use existing roads, no temporary road construction will occur.

There will be no fireline construction within riparian areas and existing roads and natural barriers would be used to control the fire.

Slash piles will be placed at least 50 feet from the stream, preferably in areas that were previously disturbed. Slash piles should not interfere with natural drainage patterns. Lopped and scattering may occur within the 50 feet buffer.

Fisheries - Aspen Restoration

If deemed necessary due to monitoring: enclosure fencing will consist of buck and pole, electric or wire and installed by hand or with mechanized equipment.

Fences may be constructed adjacent to stream channels or some distance from the riparian area. There would be no fences that cross perennial or ephemeral stream courses and designed fences with riparian areas would allow unobstructed streamflow.

Fisheries - Monitoring

Ongoing stream temperature monitoring may occur on Crow Creek, South Fork Crow Creek, Eureka and Hall creeks.

Total suspended sediment monitoring will occur at two index sites on Crow Creek.

Non-native fish suppression efforts may continue in select streams as staff or funding is available.

Monitor recruitment/health of riparian planting efforts.

Best management practices post implementation monitoring following practices for Water Quality Management on National Forest System Lands (USDA, 2012).

Fuels

When fireline is necessary for containment purposes, it will be constructed by hand, 18 to 24 inches wide, void of fuel and the surface scraped to mineral soil.

Ponderosa pine will not be targeted by hand slashing with any treatment. These trees will be protected and retained to the extent feasible during prescribed fire treatments.

Fireline rehabilitation associated with burning activities will be pulling back (with hand tools) the berm adjacent to the constructed line, constructing water bars as needed and where fireline intersects designated trails disguise the line and discourage use by scattering cut vegetation.

Prescribed fire treatments will be monitored for post-fire vegetation response and reseeding/re-vegetating as needed.

Treatment activities near identified values at risk (i.e. historical/cultural sites, private lands, structure or mining features) will include necessary mitigation measures to further reduce or remove adjacent fuels to ensure that no damage will occur during implementation of prescribed fire activities.

Heritage

The majority of cultural resources in the Johnny Crow project area are historic mines and cabins. Identified cultural resources would be avoided or protected by project activities i.e. prescribed fire near historic structures. The project will be in compliance with the Forest Plan and National Historic Preservation Act Section 106.

During the project, cultural resources could be discovered. If any cultural resource is discovered the Forest Archaeologist will be informed. If the resource is a wooden structure the site will be avoided or protected.

Hydrology

All wetlands, seeps, and springs will be identified and marked on the ground during project implementation.

Exclude vehicles from wetland areas unless during winter conditions as specified in the Project Soils Specialist Report.

Upon completion of pile burning, install log erosion barriers where deemed appropriate by Soils or Hydrology staff in order to prevent potential runoff from burn sites.

Avoid active ignition within riparian areas or wetlands. A slow backing down fire into sensitive areas is preferred.

Minerals

Forest Minerals personnel will provide mapped locations of known reclaimed and un-reclaimed abandoned-inactive mine sites, hazardous mine openings, discharging mine features, and authorized active mineral operations to implementation resources annually prior to field season. These sites and features will be identified on the ground prior to operations with the assistance of Minerals staff. Existing inventory and ground verification will serve to identify and define special treatment areas within implementation areas. Depending on mine site or feature conditions, additional measures for identified special treatment areas may include:

- Provide for vegetative buffer zones, or use slash as surface cover around waste material piles (waste rock and/or tailings) and on reclaimed surfaces to reduce the potential for surface erosion from these areas in the event of a high intensity storm or extreme runoff event post vegetation treatment.
- Provide for vegetative buffers zones and limit surface disturbance near features discharging mine waters in order to restrict any alteration of flow conditions at points of discharge or within constructed drain features.
- Treatment areas where mine site workings (surface and/or subsurface) are known to exist or suspected would be inventoried by minerals staff prior to vegetation treatment activities to identify potential site related hazards.
- Avoid Jackpot burning (concentrated/heavy fuel loading) and/or constructing burn piles over mine features that have been physically closed with polyurethane foam product.
- Coordinate vegetation treatment activities with operators conducting authorized mining related activities under an approved current Plan of Operations.

Any previously undocumented abandoned-inactive mine features discovered during implementation will be reported to Minerals and Heritage staff.

Range

Some treatment areas are within active allotments, however, treatment areas are relatively inaccessible to livestock. Resting or deferment of grazing will be determined prior to implementation of the treatment areas.

In treatment areas that are determined to require resting or deferred grazing, they will be rested or deferred before and after treatment for one to two growing seasons or until monitoring indicates the site has recovered from project implementation.

Resting and/or deferment would be coordinated at least one year prior to burning.

To minimize impacts to permittees and simplify planning and implementation, attempts will be made to implement burning treatment activities in one pasture of each allotment at a time so that resting is more feasible and attainable if necessary.

Fencing, in aspen and/or riparian areas, either temporary or permanent, may be needed to protect areas of concern after burning. This will be coordinated with the fisheries and wildlife biologists.

After implementation of activities has taken place, all livestock water developments and fences affected would be replaced or repaired to the original condition.

Noxious Weeds

Noxious weeds will be treated per the 2006 Record of Decision for the Helena National Forest Noxious Weed Treatment Environmental Impact Statement.

Prior to implementation, weed inventories will be completed. Pre-and/or post-treatment method will be determined by the Range/Weed specialist, wildlife biologist and fuels specialist and will follow the allowable practices found in the 2006 Record of Decision for the Helena National Forest Weed Treatment Environmental Impact Statement. Treatment methods will be based on species present, infestation levels, and location of infestations.

Avoid prescribed fire in mapped and identified biocontrol sites and study areas.

Avoid using prescribed fire in areas with high weed infestation(s). These areas will be determined by range/weed specialist after inventory is conducted. A minimum 20 foot buffer will be needed around these areas in order to follow best management practices, unless fire is deemed to be an effective method of weed control.

Follow Best Management Practices in appendix B of the noxious weed specialist report.

A 100-foot buffer around any sensitive plant species will be required when herbicides are applied. Buffers will be clearly identified prior to any treatment so applicators can easily see and avoid the sensitive plants. Within this buffer only hand-pulling of weeds will be allowed, (Environmental Protection Measure #22 from the Helena National Forest Noxious Weed FEIS and Record of Decision 2006).

Recreation

Implementation of the proposal will include a public notification plan with consideration given to the timing of the implementation and the recreational uses such as hunting season. This will include coordination with the Forest Public Affairs Officer and Law Enforcement to ensure the public is well informed of the schedule and its potential impacts. As appropriate, place interpretative panels to aid in public education of fuels management and forest health around recreation sites nearby during project activities.

Minimize operations during big game hunting season to reduce conflicts.

Repair and rehabilitate any incidental damage caused by this project to recreation improvements/facilities after project activities are completed.

Any dispersed recreation campsites that cannot be avoided for pile burning should be reconditioned to their pre-disturbance state at the end of operations. This will include removing debris, seeding native vegetation and treating noxious weeds so that these areas can be used again as dispersed campsites.

Silviculture

Stands of healthy limber pine (full crowns, little or no white pine blister rust) with a density of 50 trees per acre or greater, will not be burned, but other competing conifers will be hand slashed;

No treatment would occur in mapped old growth. Should additional old growth stands be detected during layout, they would not be treated.

Soils

Avoid burning on slump-prone soils.

Burn in moist soil conditions, particularly in areas with high fuel loads

Avoid active ignition on slopes greater than 50 percent.

Implement erosion control measures before and after burns on highly erodible landscapes such as granitic soils and areas where fire occurs on slopes greater than 50 percent. These control measures may include ground cover establishment, such as seeding with native seed, or altering burn season to have a short period of exposed soil prior to plant regrowth. They could also include straw mulch and installation of sediment barriers (i.e. straw wattles) to retain sediment on site. Site conditions may influence the efficacy and feasibility of various erosion control measures and should be a consideration during selection.

Grazing will be deferred following burns until ground cover and plant roots have reestablished. Root and ground cover reestablishment will be determined by a Forest Service soil or range specialist.

Wildlife

If any listed threatened/endangered species are detected in the project area, activities will be examined to determine if modification is necessary.

In order to minimize effects to nesting birds, prescribed fire will be implemented prior to May 1 or after July 31 to the extent practicable. Exceptions may occur if burning windows become limited. These will be reviewed on a case by case basis with a wildlife biologist prior to implementation.

Helicopter-ignited prescribed fire will not exceed 2 activities per year and 2 days/activity.

Forested inclusions in grass and shrublands will be retained in order to provide cover adjacent to grass and scrublands. These areas will be identified prior to treatments.

Trees less than 12 inches in diameter that have been identified for 'removal' in non-forested habitats will be girdled or cut and left on site where needed in order to provide for perch sites and other habitat components in treatment areas.

Avoid burning concentrations of antelope bitterbrush. These areas will be identified prior to treatments in order to avoid burning and any conifers in these concentrations will be hand-slashed.

Prescribed fire will not be applied in sagebrush stands except where fire may incidentally extend into a sagebrush stand as a result of adjacent grassland burning or where individual, scattered sagebrush occurs in grassland treatments. Conifers in sagebrush (the exceptions notwithstanding) will be hand-slashed.

Treatments in wetlands, riparian zones, and aspen will be monitored in order to determine if protection measures (e.g. fencing) are necessary to promote re-establishment of willows, aspens, and other shrub species of interest.

Hand cutting of conifers in wetlands and riparian zones will be site-specific; only those conifers that will impede shrub response or that pose a safety hazard during project implementation will be felled or girdled.

Slashing/burning/thinning activity will generally be confined to a single drainage at a time with all work completed in the shortest time possible.

If previously unidentified elk calving and nursery areas are located prior to or during project implementation, these areas will be protected from disturbance. This will be from late May through July unless surveys indicate areas are no longer being used.

Where treatments overlap with, and will result in the removal of, thermal cover, thermal cover will be identified and dropped from treatments.

Treatments in elk hiding cover will be field validated prior to implementation. Once treatment location is finalized, remaining hiding cover will be configured into patches of at least 40 acres to ensure that Forest Plan thresholds are not exceeded.

Trees will be left along roadways in order to provide screening for big game species such as elk, mule deer and moose.

Where treatments overlap with snowshoe hare habitat (early stand initiation, stand initiation, and multistory), these habitat components will be identified in the field and dropped from treatment.

If previously unidentified bighorn sheep lambing and nursery areas are located prior to or during project implementation, these areas will be protected from disturbance. This will be from April 15 through June 30 unless surveys indicate areas are no longer being used. The same applies to mountain goats although it's unlikely they will occur in the project area.

For new active goshawk nests, a no treatment buffer of a minimum of 30 to 40 forested acres, if available, will be maintained around nest trees.

No ground disturbing activities will occur inside known post fledgling areas from April 15 through August 15 to protect the goshawk pair and young from disturbance during the breeding season until fledglings are capable of sustained flight. Site-specific data will continue to be used and, if needed, timing restrictions will be designed to reflect variations in fledging dates.

Large deformed trees will be retained for use by goshawks as nest trees.

If a great gray owl (or great horned owl) nest is located in the project area, activities will be restricted within a quarter mile of the nest during the nesting season between March 1 and August 1.

Prior to implementation, each season, those responsible for executing the project will confer with the project wildlife biologist, Elkhorn Mountain's Coordinator, and Montana Fish, Wildlife and Parks biologist to ensure that all mitigation and project design measures relevant to the wildlife resource will be met. This will involve a detailed review of maps, a unit-by-unit discussion of tactics, and a field review of any units where the intentions of wildlife mitigation/design measures are unclear.

A subset of treatments will be monitored pre- and post-implementation to determine if desired outcomes have been achieved. These results will be used to determine if adjustments to treatment prescriptions are needed to ensure that project implementation is aligned with project analyses and assumptions.

Appendix C: Treatment Types and Expected Benefits

Grasslands/Shrublands Treatment

In order to achieve the desired conditions within the grass and shrublands we will use hand slashing to remove colonizing conifers (primarily lodgepole, Douglas-fir, juniper and/or individual limber pine trees). In addition to hand slashing, prescribed fire, specifically broadcast burning, would be used to accomplish the overall goals. Broadcast burning will not be applied in sagebrush stands except where fire may incidentally extend into a sagebrush stand as a result of adjacent grassland burning or where individual, scattered sagebrush occurs in grassland treatments. Selected forested inclusions, areas defined as - pockets of cover in large open areas well away from existing timbered edges - in grass and shrublands would be retained to the extent feasible in order to provide cover adjacent to grass and shrublands. Where this may not be feasible, we would ensure fire effects are minimal in these areas.

Expected Benefits

Our goal is to maintain and enhance grasslands and shrublands by reducing the coarse surface fuels, reducing conifer colonization, and reinvigorating grass growth. Where present, sagebrush and antelope bitterbrush predominate communities will be maintained and prescribed fire will not be used.

Treatments would result in a 70 to 90 percent reduction of colonizing conifers within grasslands thereby increasing forage production and grassland vigor.

Prescribed fire in grass and shrublands quickly improves the utility of potential foraging sites for native grazers—attracting them back to habitats that they may have been underutilizing because of deteriorating forage quality. These treatments can increase habitat opportunity for elk and mule deer on all seasonal ranges [see Peek 1986, p. 128-156]. Over time, treatments in the shrub and grassland communities would also benefit bird species including the McCown's longspur and long-billed curlews (grasslands) and Brewer's sparrows and sage thrashers (shrublands) as the structural complexity of these communities increases post-treatment.

Riparian/Wetland/Aspen Habitat Enhancement

Competing conifers would be removed from riparian areas to promote aspen, willow, and other riparian associated vegetation. Treatments in riparian/wetland habitats include *Hand Slashing to Promote Riparian/Wetland Habitats* and/or *Low Severity Prescribed Fire* through indirect ignition, meaning no active ignition within the riparian or wetland area. However, fire may be allowed to creep into the habitat.

Hand slashing of conifers and application of prescribed fire would occur where needed to promote regeneration and growth of desired vegetation species. Where needed, slash barriers would be erected to limit browsing damage to shrubs.

Expected Benefits

Our goal is to improve riparian habitat by increasing vigor and distribution of willows and other riparian associated vegetation. The resulting regrowth should provide more robust vegetation important for species associated with wetlands and/or riparian zones.

Willow flycatchers are strongly associated with tall willows and should therefore respond positively to treatments that promote willow restoration (Sanders and Flett 1989). Moose rely on a mosaic of habitat components that encompass quality forage, edge, and adjacent cover (Costain 1989). The wetlands and

riparian zones at the higher elevations in the project area tend to be surrounded by forested stands. Treatments in these areas should promote the growth of deciduous shrubs and tall forbs and are likely to improve local foraging conditions for moose adjacent to cover.

In order to meet our goals and objectives we propose to reduce conifer colonization within aspen stands. This would maintain and/or improve aspen stands by increasing vigor, extent of the distribution and by promoting uneven-aged character and active suckering within the stands.

Several Neotropical bird species found in the project area would benefit from the treatments in aspen stands including warbling vireos, red-breasted nuthatches, and chickadees. Improved tree vigor over time would also benefit cavity nester species like downy and hairy woodpeckers and red-naped sapsuckers (Sallabanks et al. 2005). Red-naped sapsuckers are almost uniquely associated with aspen (Dresser 2015) which has declined in the west since pre-settlement times and recruitment of new stands remains low in the project area. Increased suckering would also benefit elk, and moose due to an increase in succulent forage. Ruffed grouse, an important component in the diet of several species including goshawks, also benefit from aspen treatments (Dessecker et al. 2006).

Promotion of Forest Stand Age Class and Species Diversity

We propose to promote age class diversity within existing conifer stands by using mixed severity prescribed fire. This consists of burning 40 to 60 percent of the treatment areas. Upon implementation, units would comprise a mosaic of areas with complete vegetation consumption and unburned areas.

Expected Benefits

This type of prescribed fire would create a forested mosaic comprised of differing age and size classes. Tree species and size class that would be affected would be site-specific. Landscapes characterized by fires with high variability in timing, intensity, pattern, and frequency tend to have the greatest diversity in ecosystem components and animal species. Prescribed fire treatments will result in patterns of habitat that are desirable to elk and mule deer (focal species in the Elkhorn Mountains) – i.e. early successional habitats where forbs, grasses, and shrubs dominate interspersed with cover.

Project implementation would result in (1) changes in availability of habitat patches and diversity within them, (2) changes in the composition and structure of larger areas which provide the spatial context for habitat patches, and (3) changes in connections among habitat patches. Landscape diversity is expected to increase in turn providing wildlife species increased opportunities to select from a variety of habitat conditions and successional stages. Additional benefits of creating new age class patches would be to diversify surface fuel loadings which in turn enhance regeneration success and resilience over time.

In addition to elk and deer other wildlife species that would benefit from mixed severity fire include olive-sided flycatchers, Cassin's finches (Smucker et al. 2005, p. 1544), and Williamson's sapsuckers (Hutto et al. 2015). Clark's nutcracker takes advantage of seeds that have been released by fire while other species use the now shrub dominated early seral stage for feeding, nesting, and as display sites (Hutto et al. 2015).

Promotion of Five-needle Pine

Competing conifers (primarily lodgepole pine and subalpine fir in whitebark pine stands and Douglas-fir and juniper in limber pine stands) within existing whitebark and limber pine stands would be removed through hand slashing and/or girdling.

Expected Benefits

Due to their importance to wildlife we will enhance five-needle pines within the project area. Treatments that promote growth and vigor of five-needle pines will benefit a variety of wildlife by promoting overstory canopy development and subsequent large cone crop production.

As a result, an important high energy food source, more so with whitebark pine than limber pine, will become available over time for several species including but not limited to Clark's nutcrackers, red squirrels, and bears (Tomback 2001, pp. 89-104, Tomback and Kendall 2001, pp. 243-262).

Indirect Benefits of the Treatments

Wildfire Manageability:

This project will reduce ladder fuels in the forest understory reducing the potential for future wildfires ascending to the canopy that in turn could result in stand replacing events. Reductions of these ladder fuels will help reduce the future fire intensity.

Forested Stands:

Prescribed burning in beetle-killed lodgepole pine stands would move portions of these stands toward rapid regeneration of lodgepole pine, while leaving slower-growing shade tolerant spruce and fir to respond gradually as the overstory opens up, creating a mosaic of species and structural classes. Creating diversity in forest species and structure will render stands more resilient to future disturbances; not all stands or portions of stands will be susceptible to the same disturbance at the same time so that large expanses of forest will not be removed at once, as in the recent mountain pine beetle outbreak.

Mature Douglas-fir stands receiving treatment will increase in vigor with a long-term benefit of less competition and lowered susceptibility to insect and disease whereas the mature ponderosa pine will see similar benefits as the Douglas-fir including promotion of stand diversity. No change will occur in old growth forest stands due to excluding treatment from these stands but the project will enhance some treatment areas ability to maintain or gain old growth characteristics through time. Snags currently exceed the minimum required by the Forest Plan and will not be substantively altered by this project.

Water and Sediment yields

Implementation of this project will result in a non-detectable increase in water yield. The treatment units are predicted to recover over the next three to seven years resulting in a low probability of increase flows from treatment areas. Sediment delivery from treatment areas is also predicted to be low and below that of natural occurring wildfires; therefore there may be an overall decrease in sediment as there would be a reduction in the likelihood of high-intensity wildfire on treated units.

Riparian, Wetland and Aspen

Hand thinning of small diameter trees outside of the 50-foot buffers (unless otherwise approved by aquatic specialist) and low-intensity fire would improve diversity of understory riparian vegetation such as hardwoods. Thinning of overstocked young conifers stands (Agee 1993) would promote stand health and reduce susceptibility to insects and disease. Ultimately this would produce an increase in shade bearing trees and future large wood recruitment. These habitat enhancing efforts would ultimately improve stream channel integrity, channel processes, and the sediment regime under which the riparian

and aquatic ecosystems developed. Hazard trees would be left in place or felled for additional instream habitat.

While aspen maintain their position on a given site through asexual reproduction, following a major disturbance, such as wildfire, windborne seed could rapidly occupy a site, often over great distances. The rapid growth rate of aspen allow it to out compete conifers in areas where ground moisture is in good supply. This is why aspen restoration efforts are focused largely within some of these riparian areas.

Fuel Loading

While the openings created by prescribed fire operations would not decrease the chance of any wildfire occurring, they will provide breaks in the current stands, lowering the amount of fuel available to burn, helping to limit the spread and size of a high-intensity wildfire. This would result in safer and more effective management of wildfires and strengthen the long-term fire management goals and objectives for the Elkhorn Wildlife Management Area as defined in the Land Resource Management Plan.

Appendix D: Treatment Descriptions

Mixed Severity Burn:

Mixed severity prescribed fire would be utilized to create and promote a mosaic patchwork of age, size, and species diversity, and reduce fuel loadings within existing conifer stands. Mortality patch size and distribution would be dictated by stand and burning conditions, with ignitions generally anchored at natural openings. Mortality patches (openings) will generally not exceed 5 to 10 acres in large units (greater than 50 acres) or 20 percent of the unit size in smaller units (less than 50 acres). The burn would occur on 40 to 60 percent of the treatment area. Hand slashing as needed would occur to prepare the fuel-bed and enhance containment lines. Active ignition areas would target slopes less than 35 percent with limited amounts of mineral soil being exposed (5 to 25 percent). Up to 30 percent of coarse woody debris (greater than 3 inches in diameter) may be consumed but the remainder would be retained for nutrient cycling and wildlife habitat. Other objectives include reduction of fine woody debris (less than 3 inches in diameter) and duff fuel loadings. Burned patches are expected to regenerate over time from the seed sources in unburned areas, creating a new age class. In the largest forested patches, the interior trees may take over a decade to regenerate.

Low Severity Burn:

Prescribed fire in grass and shrubland areas with low severity to reduce conifer colonization and stimulate grass growth. Burn would cover 60 to 80 percent of the treatment area causing mortality on 70 to 90 percent of the colonization (defined as conifers less than 12 inches diameter-at-breast-height). Forested inclusions within grass and shrublands would generally be retained; overall direct and indirect mortality of trees greater than 12 inches diameter-at-breast-height would be less than 10 percent and less than one acre mortality patches may occur in the overstory. Objectives include reducing fine woody debris (less than 3 inches in diameter), reducing duff fuel loading while minimizing exposure of soil (less than 10 percent), and retaining most coarse woody debris (greater than 3 inches in diameter) for nutrient cycling and wildlife habitat. Active ignition on slopes greater than 35 percent would be minimized. Hand slashing of small diameter trees, (generally less than 12 inches diameter-at-breast-height) would occur to create the desired fuel bed and fire intensity needed to accomplish objectives.

Broadcast Burn:

The goal is to reduce slash and prepare the site for regeneration. It is a moderate intensity fire where direct and indirect mortality of leave trees is less than 10 percent (reserve, shelter or seed trees left are minimal and a high priority to protect). Slashing as needed would occur to limit intensity and create a fuelbed for burning. The goals are to reduce fine woody debris (greater than 3 inch diameter), reduce duff fuel loadings, expose five to 25 percent mineral soil, and retain most coarse woody debris (greater than 3 inch diameter) for nutrient cycling, seedling microsites and wildlife habitat.

Hand Slashing:

Cutting of non-desired conifer trees with chainsaws. Slash would be lopped and scattered to be within 18 to 24 inches of the ground surface. A general criterion of *less than 12 inches diameter-at-breast-height* was chosen due to the need to pull the colonizing conifers back to the tree line and/or the

forested inclusion, in addition it was felt that these trees provided a continuing seed source and would prohibit the overall goals of the treatments.

- a. *Hand Slashing in Grasslands:* Either as a stand-alone treatment or prior to low severity burning, slashing will focus on achieving conifer colonization objectives. Seventy to 90 percent of conifers other than five-needled pines and ponderosa pine less than 12 inches diameter-at-breast-height will be cut. Forested inclusions will remain intact and will not be targeted for slashing or burning. No trees greater than 12 inches diameter-at-breast-height will be cut in any area.
- b. *Hand Slashing to Promote Riparian/Wetland Habitats:* This treatment would be done in riparian areas and/or wetland habitats to reduce conifer colonization. Generally all conifers 12 inches diameter-at-breast-height would be cut in these areas.
- c. *Hand Slashing to Promote Aspen:* This treatment would be done in areas with aspen and within 20 feet outside of clones to reduce conifer colonization. Generally all conifers 12 inches diameter-at-breast-height would be cut in these areas.
- d. *Hand Slashing in Forest Age Class & Species Diversity:* This treatment would occur prior to mixed severity burning, slashing would focus on cutting conifers other than 5-needled pines and ponderosa pine to facilitate burning and control lines, only where necessary to achieve objectives. Generally only trees less than 12 inches diameter-at-breast-height would be cut, except where the felling of larger diameter trees is necessary, i.e. felling of a hazardous tree for safety.
- e. *Hand Slashing for Five-needle pines:* This treatment would be done in whitebark pine and limber pine stands. All competing conifers would be cut except for ponderosa pine.

Hand Piling:

Where necessary to meet objectives, such as areas of high fuel concentrations or along fire control lines, hand slashed material would be hand piled and burned.

Girdling:

Girdling would consist of removing the bark and cambium in a strip around the tree near the base, to disrupt the flow of nutrients to the roots, eventually killing the tree.

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